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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,152	02/25/2002	Anders Terje Brandt		9187

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VITESSE SEMICONDUCTOR CORPORATION  
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EXAMINER
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LEE, ANDREW CHUNG CHEUNG

ART UNIT	PAPER NUMBER
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2616

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/081,152

Applicant(s)

BRANDT ET AL.

Examiner

Andrew C. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. Claims 4, 13 are objected to because of the following informalities:

The phrase "the queues of the of the first group" is incomprehensive.

Does the Applicant mean "the queues of the first group" or "the queues of the  
????? of the first group"?, where ????? implies some terms are missing.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 recites the limitation "none of the queues of the of the first group" in lines  
5 – 6, page 7.

Claim 13 recited the limitation "none of the queues of the of the first group" in  
lines 5 – 6, page 10.

There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all  
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 10, 2, 11, 3, 12, 4, 13, 5, 14, 6, 15, 7, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amou et al. (US 6895012 B1) in view of Chow et al. (US 6438134 B1).

Regarding claims 1, 10, Amou et al. disclose the limitation of a method and an apparatus of transmitting information units or packets from a plurality of queues into a single transmission medium (recited "the packet scheduling apparatus is provided with a queue set comprising a plurality of queues on its input side and has an output side connected to the output link" as transmitting information units or packets from a plurality of queues into a single transmission medium; Fig. 3, column 5, lines 12 – 15), wherein the units or packets may have different sizes (recited "a variable  $F_i$  of each queue is computed" as the units or packets may have different sizes; column 2, lines 15 – 29), the method comprising: a bandwidth guaranteeing process transferring units or packets from one or more queues to the transmission medium in a manner so that each of those queues can obtain at least a predetermined bandwidth (recited "the queue set includes bandwidth guaranteed queues, and by setting the weights of each of the bandwidth guarantee queues" as bandwidth guaranteeing process transferring units or packets from one or more queues to the transmission medium in a manner so that each of those queues can obtain at least a predetermined bandwidth; Fig. 3, element 13, "bandwidth guaranteed queues" as bandwidth guaranteeing process; column 5, lines 16 – 18, lines 55 – 56), and a queuing process (Fig. 8) comprising the steps of: 1. assigning a priority or quality to each of the queues; (recited "the weight memory means notifies the weights of the bandwidth guaranteed queues stored in it

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and the weight of the priority queue class to the weight sum" as assigning a priority or quality to each of the queues; Fig. 8, Fig. 9, element 21, priority queue selecting, column 10, lines 21 – 34, lines 39 – 43), 2. defining, for each of the queues, a variable (recited "by setting the weight  $\Phi_i$  of the bandwidth guaranteed queues and the weight  $\Phi_p$  of the overall priority queue class" as defining, for each of the queues, a variable; column 5, lines 55 – 57), and 3. when no queues transmit units or packets using the bandwidth guaranteeing process (recited "when all of the priority queues of the priority queue class are empty" as when no queues transmit units or packets; column 7, lines 54 – 60): determining a queue having a variable with a value fulfilling a predetermined criterion (recited "the smaller the value of  $\text{pri}_i$ " as a queue having a variable with a value fulfilling a predetermined criterion; column 12, lines 39 – 42), transmitting a packet or unit from that queue to the transmission medium (recited "this queue  $i$  is selected and  $\text{select}=1$  is output from the selecting means" as transmitting a packet or unit from that queue to the transmission medium; column 12, lines 54 – 58), and determining a new value for the variable of the queue (recited "this queue  $i$  is selected and  $\text{select}=0$  is output from the selecting means" as determining a new value for the variable of the queue; column 12, lines 54 – 58), the new value relating to a mathematical operation using a previous value for the variable at a point in time prior to transmission of the packet or unit and a factor scaling with/relating to the priority or quality of the queue multiplied with a factor relating to a size of the packet or unit transmitted from the queue and/or a period of time used for transmitting the packet or unit (recited "computes the service time  $F_i$  of the queue  $i$ , stores  $F_i$  after this

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computation in the memory” as determining a new value for the variable of the queue, the new value relating to a value for the variable at a point in time prior to transmission of the packet or unit plus a factor scaling with/relating to the priority or quality of the queue multiplied with a factor relating to a size of the packet or unit transmitted from the queue and/or a period of time used for transmitting the packet or unit; column 6, lines 35 – 50, column 8, lines 1 – 52), where the mathematical operation brings the new value to, compared to the previous value, not fulfill the predetermined criterion (Fig. 10, Fig. 11, column 12, lines 25 – 58). Although Amou et al. disclose implicitly the limitation of wherein the units or packets may have different sizes (recited “a variable Fi of each queue is computed” as the units or packets may have different sizes; column 2, lines 15 – 29), Chow et al. disclose explicitly the limitation of wherein the units or packets may have different sizes (recited “schedulers may be asynchronous in nature and operate on variable length data packets” as packets may have different sizes; column 13, lines 25 – 27, the subject matter ntVBR and nrtVBR (variable bit rate) implies the variable length data packets; column 12, lines 17 – 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amou et al. to include wherein the units or packets may have different sizes such as that taught by Chow et al. in order to provide method for servicing a plurality of queues holding messages, such as data packets, destined for processing by a resource having a finite processing bandwidth, such as a communications link having a finite transmission bandwidth (as suggested by Chow et al., see column 3, lines 17 – 21).

Regarding claims 2, 11, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein step 3 comprises: when no queues transmit units or packets using the bandwidth guaranteeing process (recited “when all of the priority queues of the priority queue class are empty” as when no queues transmit units or packets; column 7, lines 54 – 60): determining a queue having data and having a variable with a smallest value (recited “the smaller the value of  $pri\_i$ ” as a queue having data and having a variable with a smallest value; column 12, lines 39 – 42), transmitting a packet or unit from that queue to the transmission medium (recited “this queue  $i$  is selected and  $select=1$  is output from the selecting means” as transmitting a packet or unit from that queue to the transmission medium; column 12, lines 54 – 58), and determining a new value for the variable of the queue, the new value relating to a value for the variable at a point in time prior to transmission of the packet or unit plus a factor scaling with/relating to the priority or quality of the queue multiplied with a factor relating to a size of the packet or unit transmitted from the queue and/or a period of time used for transmitting the packet or unit (recited “computes the service time  $F_i$  of the queue  $i$ , stores  $F_i$  after this computation in the memory” as determining a new value for the variable of the queue, the new value relating to a value for the variable at a point in time prior to transmission of the packet or unit plus a factor scaling with/relating to the priority or quality of the queue multiplied with a factor relating to a size of the packet or unit transmitted from the queue and/or a period of time used for transmitting the packet or unit; column 6, lines 35 – 50, column 8, lines 1 – 52).

Regarding claims 3, 12, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein the step of transmitting the data packet or unit comprises transmitting the packet or unit in accordance with a periodic timing signal ( recited " the magnitudes of the computed service times with each other and selects the packet having the minimum service time as the packet to be output first" as transmitting the data packet or unit comprises transmitting the packet or unit in accordance with a periodic timing signal; column 4, lines 61 – 64) and wherein the step of determining the new value for the queue comprises, during transmission and for each period of the timing signal, providing a new value for the variable by performing the predetermined mathematical operation on a previous variable value and a factor scaling with the priority or quality of the queue (recited "computes the service time  $F_i$  of the queue  $i$ , stores  $F_i$  after this computation in the memory" as determining the new value for the queue comprises, during transmission and for each period of the timing signal, providing a new value for the variable by performing the predetermined mathematical operation on a previous variable value; column 6, lines 35 – 50, column 8, lines 1 – 52).

Regarding claims 4, 13, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein step 3 is adapted to be stopped, with a first set of values, when a packet or unit has been transmitted and a queue wishes to transmit a packet or unit, so that the queue can obtain at least a predetermined bandwidth, and to be resumed with a second set of values each corresponding to a value of the first set of



values, when none of the queues of the of the first group wishes to transmit a packet or unit (column 14, lines 40 – 65).

Regarding claims 5, 14, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein step 3 comprises the step of altering the variables of the queues in accordance with a predetermined relationship (recited “the weight  $\Phi_i$  of each bandwidth guaranteed queue  $i$  and the weight  $\Phi_p$  of the priority queue class are found according to equations (4) and (5)” as step of altering the variables of the queues in accordance with a predetermined relationship; Fig. 4, column 7, lines 15 – 34).

Regarding claims 6, 15, Amou et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of determining a bandwidth used for at least one of the queues (recited “the reserved bandwidth  $w_p$  of the priority queue class” as step of determining a bandwidth used for at least one of the queues; column 5, lines 33 – 43).

Regarding claims 7, 16, Amou et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of altering, on the basis of the bandwidth used by a queue, a parameter of the bandwidth guaranteeing process for the queue and/or the priority/scaling of the step of determining a new value for the queue (recited “a plurality of bandwidth guaranteed queues having reserved bandwidths

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guaranteed and queues of a priority queues to be preferentially controlled with priority orders" as step of altering, on the basis of the bandwidth used by a queue, a parameter of the bandwidth guaranteeing process for the queue and/or the priority/scaling of the step of determining a new value for the queue; Fig. 1, column 4, lines 22 – 48).

Regarding claims 9, 18, Amou et al. disclose the limitation of a method and an apparatus according to claimed wherein the step of defining the variable comprises defining an integer value relating to a priority or quality of each queue (recited "  $i = 1$ , for a selected priority queue and  $i=0$  for an unselected priority queue" as defining an integer value relating to a priority; column 11, lines 47 – 57).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amou et al. (US 6895012 B1) and Chow et al. (US 6438134 B1) as applied to claims 1, 10, 2, 11, 3, 12, 4, 13, 5, 14, 6, 15, 7, 16 above, and further in view of Ennis Jr. et al. (US 5867483).

Regarding claims 8, 17, Amou et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of determining a bandwidth used for at least one of the queues (recited "the packet scheduling apparatus is provided with a queue set comprising a plurality of queues on its input side and has an output side connected to the output link" as transmitting information units or packets from a plurality of queues into a single transmission medium; Fig. 3, column 5, lines 12 – 15). Amou et al. do and Chow et al. not disclose expressly a method and an apparatus according to claimed further comprising the step of providing information to an operator of the bandwidth used. Ennis Jr. et al. disclose the limitation of a method and an apparatus according to claimed further comprising the step of providing information to an operator of the bandwidth used (recited "to collect bandwidth utilization information for a data transmission system and analyze that information to advise an operator" as the step of providing information to an operator of the bandwidth used ; column 3, lines 24 – 34). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amou et al. and Chow et al. to include a method and an apparatus according to claimed further comprising the step of providing information to an operator of the bandwidth used such as that taught by Ennis Jr. et al. in order to monitor data transmission systems and display bandwidth utilization for the access channel or an individual transmission circuit over a predetermined time interval (as suggested by Ennis Jr. et al., see column 3, lines 13 – 15).

***Response to Arguments***

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7. Applicant's arguments with respect to claims 1 – 19 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Lee whose telephone number is (571) 272-3131. The examiner can normally be reached on Monday through Friday from 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

1. ACL

Sep 24, 2006



RICKY Q. NGO  
SUPERVISORY PATENT EXAMINER